

## CLAIMS

1. A system for transmitting aircraft operational data from an aircraft, comprising:

one or more black boxes that can store the aircraft operational data,

one or more transmitters that can wirelessly transmit the stored aircraft operational data from the aircraft; and

one or more sensors, each sensor being able to enable the wireless transmission of the aircraft operational data by the one or more transmitters upon sensing the occurrence of an event.

2. The system as claimed in claim 1, further comprising a processor/modem that receives aircraft operational data from the black box, compresses the aircraft operational data, and sends the compressed aircraft operational data to the one or more transmitters for transmission.

3. The system as claimed in claim 2, further comprising a bus to which the black box, the processor and the one or more transmitters are connected.

4. The system as claimed in claim 1, further comprising a ground-based receiver that receives the wirelessly transmitted aircraft operational data.

5. The system as claimed in claim 1, further comprising a satellite receiver that receives the wirelessly transmitted aircraft operational data.

6. The system as claimed in claim 1, wherein the one or more sensors includes a plurality of sensors, each of the plurality of sensors being able to enable the wireless transmission of the aircraft operational data by the one or more transmitters upon sensing the occurrence of an event.

7. The system as claimed in claim 1, wherein the one or more transmitters includes a plurality of transmitters and the one or more sensors includes a plurality of sensors, each of the plurality of sensors being able to enable the wireless transmission of the aircraft operational data by the plurality of transmitters upon sensing the occurrence of a predetermined event.

8. The system as claimed in claim 1, wherein the one or more black boxes includes a plurality of black boxes, each of the black boxes being able to store at least a part of the aircraft operational data.

9. The system as claimed in claim 1, wherein the black box is a flight data recorder.

10. The system as claimed in claim 1, wherein the black box is a cockpit voice recorder.

11. The system as claimed in claim 1, wherein the black box is a flight data recorder and a cockpit voice recorder.

12. The system as claimed in claim 1, wherein the one or more transmitters includes a plurality of transmitters and wherein each of the plurality of transmitters wirelessly transmits a portion of the aircraft operational data when enabled by the sensor.

13. The system as claimed in claim 12, wherein each of the plurality of transmitters transmits on a different frequency.

14. The system as claimed in claim 6, wherein the aircraft operational data includes:

sensor readings and control signals.

15. The system as claimed in claim 6, wherein the aircraft operational data includes voice signals.

16. The system as claimed in claim 15, wherein the aircraft operational data includes video signals.

17. A system for transmitting aircraft operational data from an aircraft, comprising:

- a flight data recorder that can store a first set of the aircraft operational data;

- a cockpit voice recorder that can store a second set of the aircraft operational data;

- one or more transmitters that can wirelessly transmit the first and second set of the aircraft operational data; and

- one or more sensors, each sensor being able to enable the wireless transmission of the first and second set of aircraft operational data upon sensing the occurrence of an event.

18. The system as claimed in claim 17, further comprising a processor/modem that receives the first and second set of aircraft operational data from the flight data recorder and from the cockpit voice recorder, respectively, compresses the first and second set of aircraft operational data, and sends the compressed first and second set of aircraft operational data to the one or more transmitters for transmission.

19. The system as claimed in claim 17, wherein the one or more sensors includes a plurality of sensors, each of the plurality of sensors being able to enable the wireless transmission of at least a portion of the first and second set of aircraft operational data by the one or more transmitters upon sensing the occurrence of an event.

20. The system as claimed in claim 17, wherein the one or more transmitters includes a plurality of transmitters and the

one or more sensors includes a plurality of sensors, each of the plurality of sensors being able to enable the wireless transmission of the first and second set of aircraft operational data by the plurality of transmitters.

21. The system as claimed in claim 16, further comprising a ground-based receiver that receives the wirelessly transmitted aircraft operational data.

22. The system as claimed in claim 16, further comprising a satellite receiver that receives the wirelessly transmitted formatted aircraft operational data.

23. The system as claimed in claim 19, wherein the aircraft operational data includes:  
sensor readings and control signals.

24. The system as claimed in claim 19, wherein the aircraft operational data includes voice signals.

25. The system as claimed in claim 24, wherein the aircraft operational data includes video signals.

26. A method of transmitting aircraft operational data from an aircraft, comprising the steps of:

storing aircraft operational data in a black box;  
sensing the occurrence of an abnormal operational event in the aircraft; and  
wirelessly transmitting the stored aircraft operational data upon sensing the occurrence of the abnormal operational event.

27. The method as claimed in claim 26, further comprising the step of compressing the aircraft operational data before performing the step of wirelessly transmitting the data.

28. The method as claimed in claim 26, further comprising the step of compressing the stored aircraft operational data.

29. The method as claimed in claim 26, wherein the stored aircraft operational data is transmitted with a plurality of transmitters.

30. The method as claimed in claim 27, wherein the stored aircraft operational data is transmitted with a plurality of transmitters.

31. The method as claimed in claim 26, further comprising the step of receiving the wirelessly transmitted aircraft operational data with a ground-based receiver.

32. The method as claimed in claim 26, further comprising the step of receiving the wirelessly transmitted aircraft operational data with a satellite receiver.

33. The method as claimed in claim 26, wherein the aircraft operational data includes:

sensor readings and control signals.

34. The method as claimed in claim 26, wherein the aircraft operational data includes voice signals.

35. The method as claimed in claim 34, wherein the aircraft operational data includes video signals.

36. A method of transmitting aircraft operational data from an aircraft, comprising the steps of:

storing a first set of the aircraft operational data in a flight data recorder;

storing a second set of the aircraft operational data in a cockpit voice recorder;

sensing the occurrence of an abnormal operational event in the aircraft, and

wirelessly transmitting the first and second set of the aircraft operational data upon sensing the occurrence of the abnormal operational event.

37. The method as claimed in claim 36, further comprising the step of compressing the first and second sets of the aircraft operational data before performing the step of wirelessly transmitting the data.

38. The method as claimed in claim 36, wherein the first and second set of the aircraft operational data are transmitted with a plurality of transmitters.

39. A system for transmitting aircraft operational data from an aircraft, comprising:

a black box that can store the aircraft operational data,

a processor/modem that receives the aircraft operational data from the black box and compresses the aircraft operational data;

a transmitter that can wirelessly transmit the compressed aircraft operational data from the aircraft; and

a sensor that enables the wireless transmission of the compressed aircraft operational data by the transmitter from the aircraft upon sensing the occurrence of an event.

40. The system as claimed in claim 39, further comprising additional black boxes, each of the black boxes being able to store at least part of the aircraft operational data.

41. The system as claimed in claim 39, further comprising additional transmitters, each of the transmitters being able to wirelessly transmit at least part of the aircraft operational data.

42. The system as claimed in claim 39, further comprising additional sensors, each of the sensors being able to enable the wireless transmission of the aircraft operational data by the transmitter upon sensing the occurrence of the predetermined event.

43. The system as claimed in claim 39, further comprising:  
additional transmitters, each of the transmitters being able to wirelessly transmit the stored aircraft operational data from the aircraft; and  
additional sensors, each of the sensors being able to enable the wireless transmission of the aircraft operational data by the transmitters upon sensing the occurrence of the predetermined event.

44. A system for transmitting aircraft operational data from an aircraft, comprising:

a flight data recorder that can store a first set of the aircraft operational data;

a cockpit voice recorder that can store a second set of the aircraft operational data;

a processor that receives the first and second set of aircraft operational data from the flight data recorder and from the cockpit voice recorder, respectively, and compresses the first and second set of aircraft operational data;

a transmitter that can wirelessly transmit the compressed first and second set of the aircraft operational data; and

a sensor that enables the wireless transmission of the compressed first and second set of aircraft operational data upon sensing the occurrence of an event.

45. A method of transmitting aircraft operational data from an aircraft, comprising the steps of:

storing aircraft operational data in a black box;

compressing the aircraft operational data;

sensing the occurrence of an abnormal operational event in the aircraft; and

wirelessly transmitting the compressed aircraft operational data upon sensing the occurrence of the abnormal operational event.

46. The method as claimed in claim 45, further comprising the step of receiving the wirelessly transmitted aircraft operational data with a ground-based receiver.

47. The method as claimed in claim 45, further comprising the step of receiving the wirelessly transmitted aircraft operational data with a satellite receiver.

48. A source of operational data from an aircraft, comprising:

a transmitter; and

one or more sensors disposed on the aircraft wherein the transmitter can transmit operational data from the aircraft in response to the detection of an abnormal operating event by one of the sensors.